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POSTHARVEST TECHNOLOGY

February 2011 News from UC Davis

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Director's Update

Staff at the Postharvest Technology Center have been very busy accepting registrations for our upcoming courses, including several spring courses associated with our USDA Specialty Crops Grant, such as the [Advanced Topics in Microbial Safety of Fresh Produce](#) and [Delivering More Flavorful Produce](#) workshops. Registrations have been very strong for the upcoming Fruit Ripening and Ethylene Management workshop, and enrollments are already at 50% full for our ever popular Postharvest Technology of Horticultural Crops Short Course. Consider signing up for one of these educational opportunities yourself or enroll one of your deserving employees.

--Elizabeth Mitcham



News from the Center

Lively Enrollment Activity for the 2011 Fruit Ripening Workshop

Once again, we anticipate a full house for the April 26-27, 2011 "Fruit Ripening & Ethylene Management" workshop. Facilitated by Dr. Carlos Crisosto the workshop will be held on the UC Davis campus in the Buehler Alumni and Visitors Center. This workshop provides useful information for shippers, fruit handlers (wholesale and retail) and produce managers involved in handling and ripening fruits and fruit-vegetables and managing ethylene effects on produce. The workshop focuses on how to increase profits by delivering ready-to-eat, delicious fruits and fruit-vegetables to the consumer and provides tools for managing the positive and negative effects of ethylene. For complete information about this workshop, or to enroll, link to the web page:

<http://postharvest.ucdavis.edu/Announce/fruitripening.shtml>



Applications still being accepted to attend **Advanced Topics in Microbial Safety of Fresh Produce Workshops**

Food safety professionals employed by growers, handlers, or fresh-cut processors who are involved in design, implementation, and audit compliance of prerequisite programs such as Good Agricultural Practices (GAPs) and Good Handling Practices (GHPs) will find this workshop, sponsored by a USDA Specialty Crops grant, beneficial. The strategy of the workshop will include exploring the strengths and weaknesses of the current science and data-basis for key guidance, standards, and microbiological limits that are defining preharvest, harvest, and postharvest food safety programs and performance expectations. To maximize the interactive discovery process, enrollment at each location will be capped at 40 qualified participants who meet the prerequisite professional requirements. The California Session will be held March 1-3 in Davis, and the Florida session will be held April 27-29 in Wimauma, Florida. To learn more, please see the [workshop's web page](#).



Postharvest Technology Short Course Nearly Half Full

Enrollments are well under way for the 33rd Annual Postharvest Technology Short Course, scheduled for June 13 – 24, 2011. The course is an intensive one week study of current technologies and best practices associated with the postharvest handling of fresh fruits, nuts, vegetables and ornamentals in California. The optional second week field tour will visit a wide variety of postharvest operations. For complete information or to enroll, visit the web page: <http://postharvest.ucdavis.edu/Announce/shortcourse.shtml>



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Postharvest Workshops

We hope you will join us for our 2011 UC Davis Postharvest Learning Opportunities:

- *March 1-3, 2011 (California): **Advanced Topics in Microbial Safety of Fresh Produce***. This workshop is organized as part of a University of California/University of Florida project sponsored by a USDA Specialty Crops Research Initiative grant. A second session is also available in Florida on April 27-29, 2011. Use the [workshop brochure](#) or [online application](#) form to submit your application for enrollment.
- *April 26-27, 2011: **Fruit Ripening & Ethylene Management Workshop*** - 17th Annual will be held on the UC Davis campus. *Registration is now open.*
- *June 13-24, 2011: **Postharvest Technology Short Course*** – 33rd Annual will be held on the UC Davis campus, with an optional field tour covering the San Joaquin Valley and Coastal California. *Registration is now open.*
- *September 13-15, 2011: **Fresh-cut Products: Maintaining Quality & Safety*** – 16th Annual, at the UC Davis Buehler Alumni Center's AGR Room.

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Featured Postharvest Publications



Special February Offer on "Tecnología Postcosecha de Cultivos Hortofrutícolas"

We are offering a special 25% discount on the Spanish CD version of "Postharvest Technology of Horticultural Crops. To order up to four copies, please use our [Online Order Form](#) by March 15, 2011. For a complete listing of all our publications see:

http://postharvest.ucdavis.edu/Pubs/pub_list.shtml.

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What's New on Our Website this Month

Postharvest Yellowpages: A Robust Resource

Searchable by category or business name, the Postharvest Yellowpages is a useful tool if you happen to be looking for sources for ethylene scrubbers, harvest snips, or anything in between. We recently added a new category for "[Facilities Design and Construction](#)", as well as about 20 new companies. No endorsement of the nearly 550 listed companies, or their sites, supplies, or products is intended, nor is criticism implied of those not mentioned. Please notify us, postharvest@ucdavis.edu, if you notice any links or contact information that are no longer active or correct.

Viral Episode: Storing Fresh Produce Poster

A few months ago, a blog post mention of our free "Storing Fresh Fruits and Vegetables for Better Taste" poster got picked up by Facebook (and other social media sites) and went "viral." Within about a 72 hour period we had over 12,000 requests for the poster, which of course exhausted all supplies on our shelves and left us with about 9,000 people still wishing they had a copy of the poster. To meet that need, we now offer a high quality PDF version of the poster as a free download: <http://ucanr.org/produce-storage-poster>. Now you can print copies for yourself, your family and your associates.

New Articles Added to Postharvest Publications Organized by Topic

Our [datastore](#) contains over 1,300 postharvest documents, organized by topic, and is searchable by title or author. It is one of the premiere sources of comprehensive postharvest information.

- [Drying characteristics and quality of rough rice under infrared radiation heating](#), Z. Pan, R. Khir, K.L. Bett-Garber, E.T. Champagne, J.F. Thompson, A. Salim, B.R. Hartsough, S. Mohamed. Transactions of the ASABE 45:203-211 (2011)
- [Postharvest technology for developing countries: challenges and opportunities in research, outreach and advocacy](#), Lisa Kitinoja, Sunil Saran, Susanta K. Roy, and Adel A. Kader. J Sci Food Agric 92:597-603 (2011)
- [Postharvest disease and storage life of kiwifruits](#), N.F. Sommer, J.E. Suadi. Acta Horticulturae 157:295-302 (1984)
- [Effect of different atmospheres on postharvest decay and quality of fresh strawberries](#), M.K. El-Kazzaz, N.F. Sommer, R.J. Fortlage. Phytopathology 73:282-285 (1983)
- [Postharvest handling practices and postharvest diseases of fruit](#), Noel F. Sommer. Plant Disease 66:357-364 (1982)

- [Effects of modified atmospheres on postharvest pathogens of fruits and vegetables](#), M.A. El-Goorani, N.F. Sommer. Hort. Rev. 3:412-461 (1981)
- [Aspergillus flavus infection and aflatoxin production in fig fruits](#), J.R. Buchanan, N.F. Sommer, and R.J. Fortlage. Applied Microbiology 30:238-241 (1975)

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Postharvest Specialists' Activities

Visit to Rwanda

Dr. Diane M. Barrett recently visited Rwanda, where she and colleagues from the World Food Logistics Organization (WFLO) and the University of Georgia are establishing a Postharvest Training and Services Center for Sub-Saharan Africa. They met with their collaborators at the Kigali Institute of Science and Technology and visited fruit and vegetable growers, postharvest handlers and processors. Their 3 year project is being sponsored by the USAID funded [Horticulture CRSP](#) (Collaborative Research Support Program) program that was established in 2009 at UC Davis. The project will educate 40 Master Trainers who will then educate fruit and vegetable postharvest handlers in a Train the Trainer program in seven countries.

Mitcham invited to give seminar at Purdue

Beth Mitcham was invited to give a seminar on her research activities related to understanding the mechanisms of calcium deficiency disorders in fruit at Purdue University in Indiana on February 17th. She was also invited to give a similar seminar at Valent BioSciences in Chicago the following day.

Crisosto's Central Valley Postharvest News

The February 2011 issue of Carlos Crisosto's Central Valley Postharvest News is now online and can be accessed with the following link: <http://www2.uckac.edu/postharv/PDF%20files/CVFN%20Feb%202011.pdf>.

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Postharvest Positions

Research and Development Manager Position at AgroFresh

This PhD scientist position will lead the R&D activities for new business technologies identified by AgroFresh but will also support R&D activities in AgroFresh's 1-MCP technology on fruits, vegetables and ornamentals. The research and development manager position will be based at the AgroFresh Davis Lab. <https://dow.taleo.net/careersection/10060/jobdetail.ftl?job=1100118>

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Postharvest Calendar: Upcoming Conferences, Courses and Workshops

- March 1-3, 2011. [Advanced Topics in Microbial Safety of Fresh Produce Workshop](#). (California Session on the UC Davis campus.)
- April 7-13, 2011. [V International Course on Postharvest Technology and Minimal Processing of Fruit and Vegetables](#). Offered by the Postharvest and Refrigeration Group (GPR) of the Technical University of Cartagena, Spain.
- April 11-14, 2011. [International Congress of Postharvest Pathology](#). University of Lleida, Lleida, Catalonia, Spain.
- April 26-27, 2011. [Fruit Ripening & Ethylene Management Workshop](#). 17th Annual. UC Davis campus.

- April 27-28, 2011. **Advanced Topics in Microbial Safety of Fresh Produce Workshop**. (Florida Session in Wimauma, Florida)
- April 30-May 4, 2011. **IARW-WFLO Annual Convention & Expo**. New Orleans, Louisiana.
- May 2-5, 2011. **United Fresh 2011 Convention**, New Orleans, LA, USA; United Fresh Produce Association.
- May 4-5, 2011. **Delivering More Flavorful Produce Workshop**. (Florida Session at the University of Florida - Gainesville campus.)
- May 23-26, 2011. **Postharvest Unlimited 2011**. Wenatchee, Washington.
- June 13-24, 2011. **Postharvest Technology Short Course**. 33rd Annual, UC Davis campus/field tour.
- June 28, 2011. **2nd Annual Produce Research Symposium**. Orlando, Florida.
- July 17-21, 2011. **Second International Conference on Quality Management of Fresh Cut Produce: Convenience Food for a Tasteful Life**. Torino, Italy.
- September 10-12, 2011. **I International Symposium on Mycotoxins in Nuts and Dried Fruits**. Damghan, Iran.
- September 13-15, 2011. **Fresh-cut Products: Maintaining Quality & Safety**. 16th Annual. UC Davis campus.
- October 14-17, 2011. **Fresh Summit International Convention & Expo**, Atlanta, GA, USA; Produce Marketing Association.
- December 3-6, 2011. **International Conference on Quality Management in Supply Chains of Ornamentals**. Radisson Hotel, Bangkok, Thailand. Contact Sirichai Kanlayanarat (66)2-470-7720 or gmsco@kmutt.ac.th.
- December 3-6, 2011. **Southeast Asia Symposium on Quality Management in Postharvest Systems (SEAsia2011)**. Bangkok, Thailand. Contact Sirichai Kanlayanarat (66)2-470-7720 or seasia@kmutt.ac.th
- December 3-6, 2011. **Asia Pacific Symposium on Postharvest Quality Management of Root and Tuber Crops**. Radisson Hotel, Bangkok, Thailand. Contact Sirichai Kanlayanarat (66)2-470-7720 or sirichai.kan@kmutt.ac.th.
- June 25-29, 2012. **7th International Postharvest Symposium**. Kuala Lumpur, Malaysia.

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Ask the Produce Docs

Q. Is there one list where there are tips of buying California produce in season? On ANR pubs I see separate produce. I am seeking a list that I can use or adapt for our low-income families and also to train our nutrition educators. We have many low-literacy participants so I am seeking something simple. (C.S.)



A. Glad you asked. The USDA has a resource on what's in season. This is their web site:

http://snap.nal.usda.gov/nal_display/index.php?info_center=15&tax_level=3&tax_subject=261&topic_id=2131&level3_id=7205&level4_id=0&level5_id=0&placement_default=0

The Postharvest Technology Center also has a handy table entitled "[California Fruit and Vegetables for All Seasons](#)" (based upon California Dept. of Food and Agriculture information) in their resource *California Horticultural Crops Statistical Information*.

--Christine Bruhn



Q. We have a cold storage overseas to store fruits and vegetable. Could you help me with the required C.F.M. (Cubic Feet Per Minute) of air required to store: 1) onions at 0°C temperature and 70% R.H., per ton; 2) carrots at 0°C temperature and 98% to 100% R.H., per ton; and 3) cabbage at 0°C temperature and 98% to 100% R.H., per ton ?

Once the required temperature is reached the compressor switches off and switches on again when the temperature goes beyond a setting. Do the fans of the cooling coils have to run 24 hours or do they need to be run only when the compressor is running for the above mentioned vegetables? (K.S.)

A. The general rule for refrigerated storage is to use 100 cfm per ton of product until the product reaches storage temperature and after that the air volume can be reduced to 20 to 40 cfm per ton. Use the lowest possible air volume that maintains uniform product temperature in the storage. In practice this means that product or air temperature must be periodically measured in the facility and the air volume sequentially reduced until there is an unacceptable variation in temperature. The air volume would then be increased to the lowest level that produced an acceptable temperature variation. At the low air volume the fans will be run continuously.

Another option is to use fan cycling instead of reducing air volume of the fans. With this system the fans are sized to produce 100 cfm per ton and run continuously until the product reaches design temperature. But instead of reducing fan volume the fans are cycled off for perhaps 20 minutes every hour. The storage is run for several days and product or air temperature is checked while the fans are operating. If the temperature is adequately uniform, the off cycle time is increased and temperatures are checked again. The cycle is repeated until you find the longest fan off time that produces acceptably uniform temperatures. Many distribution systems depend on the fans 'throwing' the air far enough to get good air distribution in the storage. The fan cycling system always operates at maximum capacity when on and maintains good air distribution in the storage.

--Jim Thompson

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*If you have a postharvest question that you'd like answered, please send it to postharvest@ucdavis.edu.
Link to a data store of all our previous "Ask the Produce Docs" questions and answers,
or link to archived copies of our [monthly E-Newsletter](#) as PDF documents.
Link to our [Postharvest Yellowpages](#), or email us with [additions or corrections](#).*

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Editorial Review: Beth Mitcham

Writing: Mary Reed, Beth Mitcham, Diane Barrett, Jim Thompson, Christine Bruhn

Layout & Design: Mary Reed

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